

REMARKS

Previously claims 22-24, 27-36, 39-41 and 44-58 were pending. In the instant amendments to claims, claims 22-24, 27-36, 41 and 44-58 have been canceled. Claim 39 has been amended, and new claims 59-63 have been added. Upon entry of the instant amendments to the claims, claims 39, 40 and 59-63 will be pending and under consideration.

I. AMENDMENTS TO THE CLAIMS

Claims 22-24, 27-36, 41 and 44-58 have been canceled.

Support for the amendment reciting “a mouse whey acidic protein (WAP) promoter” to claim 39 is found, for example, on page 22, lines 18, to page 23, line 25, of the specification. Support for new claim 59, reciting “a β -casein promoter” is found, for example, on page 21, line 18, to page 22, line 16, of the specification. These amendments do not necessitate additional searches since these promoters were recited in claims that have been canceled in the instant amendment.

Support for new dependent claims 60-63 is found, for example, at page 10, tbl. 1, and page 12, lines 8-13.

These amendments to the claims are requested to present claims in better form for consideration on appeal. Applicants respectfully submit that no new matter is introduced with the amendments to the claims, which are fully supported by the specification and claims as originally filed. Entry of the instant amendments to the claims is respectfully requested.

No amendment fee is believed to be due with this paper.

II. CLAIM REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH, FOR LACK OF WRITTEN DESCRIPTION

Claims 22-24, 27-36, 39-41 and 44-58 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The rejection of claims 22-24, 27-36, 41 and 44-58 is moot in view of the cancellation of these claims. The rejection of claims 39 and 40 is respectfully traversed.

To satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. *Vas-Cath Inc. v. Mahurkar*, 19 U.S.P.Q.2d 1111, 1117 (Fed. Cir. 1991).

The Patent Office alleges that written description is lacking for the genus of nucleic acid molecules recited in the claims, more specifically, the Patent Office contends that the

claim language does not limit the biofilament polypeptide encoded in the nucleic acid molecule to dragline silk proteins produced by *Nephila clavipes* or *Araneus diadematus*. Without acquiescing to the propriety of this rejection, Applicants respectfully submit that the rejection of claims 39 and 40 is obviated in view of the amendment to claim 39 in which the biofilament polypeptide “is a dragline silk polypeptide selected from the group consisting of *Araneus diadematus* fibroin-3 (“ADF-3”), *Araneus diadematus* fibroin-4 (“ADF-4”), *Nephila clavipes* dragline silk-1 (“NcDS-1”), and *Nephila clavipes* dragline silk-2 (“NcDS-2”).” NcDS-1 is spideroin 1 from *Nephila clavipes*, now often referred to in the art as major ampullate spideroin I (“MaSpI”), and NcDS-2 is spideroin 2 from *Nephila clavipes*, now often referred to in the art as major ampullate spideroin II (“MaSpII”). See, e.g., U.S. Pre-grant Publication No. 2004-0102614. Applicants respectfully submit that the claims 39 and 40 fully comply with the written description requirement.

For the reasons explained above, Applicants respectfully request that the rejection of claims 22-24, 27-36, 39-41 and 44-58 under 35 U.S.C. § 112, first paragraph, be withdrawn.

III. CLAIM REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH, FOR LACK OF ENABLEMENT

Claims 22-36, 39, 40 and 44-58 stand rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement. The rejection of claims 22-36 and 44-58 is moot in view of the cancellation of these claims. The rejection of claims 39 and 40 is respectfully traversed.

The Patent Office acknowledges that the specification is enabling for:

- (i) a nucleic acid molecule comprising a mouse whey acidic protein (WAP) promoter operably linked to a nucleotide sequence encoding a polypeptide, wherein said polypeptide comprises a biofilament polypeptide and a leader sequence that enables secretion of said biofilament polypeptide by milk-producing cells into milk of a ruminant, and wherein said biofilament polypeptide is a dragline silk polypeptide produced by *Nephila clavipes* or *Araneus diadematus*; and
- (ii) a transgenic female ruminant comprising germline and somatic cells that comprise the nucleic acid molecule as set forth in part (i), wherein the ruminant secretes a biofilament polypeptide into milk; and
- (iii) a method for producing a biofilament polypeptide, comprising: providing a transgenic female ruminant of part (ii) and isolating the biofilament polypeptide from milk produced by the transgenic female ruminant.

Applicants respectfully submit that in view of the amendment to claim 39, directed to a transgenic female ruminant (as is part (ii), above) and claim 40, directed to a method for producing a biofilament polypeptide (as is part (iii), above), these two claims are fully enabled. Two polypeptides present in *Araneus diadematus* dragline silk include ADF-3 and

ADF-4, while NcDS-1 (also known as spidroin 1 or MaSpI in the art) and NcDS-2 (also known as spidroin 2 or MaSpII in the art) are the two polypeptides found in *Nephila clavipes* dragline silk. *See, e.g.*, Specification at page 10, tbl. 1, for ADF-3 and ADF-4, and page 12, lines 8-13 for NcDS-1 and NcDS-2.

The declarations of Dr. Karatzas filed December 3, 2004, and April 18, 2002, explain that dragline silk polypeptides have been expressed in milk of transgenic ruminants in amounts useful to isolate the polypeptides (*see, e.g.*, paragraphs 6 and 7 of the December 3rd declaration, and paragraph 4c of the April 18th declaration). With regard to the MaSpII-expressing transgenic ruminants discussed in paragraph 4c of the April 18th declaration, the Patent Office contends that such experiments were not performed in accordance with the teachings of the specification since these ruminants were generated using nuclear transfer rather than using pronuclear microinjection. *See* Office Action dated November 17, 2005, page 5, second paragraph. Nonetheless, regardless of how the transgenic construct was introduced, the construct works to express quantities of MaSpII that can be isolated from in the milk of transgenic ruminants. The Patent Office has not provided a reason why a construct that works in transgenic ruminants generated by nuclear transfer should not also work in transgenic ruminants generated by pronuclear microinjection.

For the foregoing reasons, Applicants respectfully submit that claims 39 and 40 are fully enabled. It is requested that the rejection of claims 22-36, 39, 40 and 44-58 under 35 U.S.C. § 112, first paragraph, be withdrawn.

Applicants respectfully submit that new claim 41, which recites a β -casein promoter operably linked to a nucleotide sequence encoding a polypeptide, is fully enabled. Indeed, transgenic ruminants expressing dragline silk polypeptides in milk under control of the β -casein promoter have been generated. *See, e.g.*, Declaration of Dr. Karatzas filed December 3, 2004, paragraph 6.

IV. CLAIM REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 22-24, 27-36, 39-41 and 44-58 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 22-24, 27-36, 41 and 44-58 have been canceled, hence the rejection of these claims is moot.

The Patent Office alleges that the phrase “a plurality of repeat motifs as present in dragline silk produced by *Nephila clavipes* or *Araneus diadematus*” is unclear. The rejection of claims 39 and 40 is obviated in view of the amendments to the claims.

Applicants respectfully request that the rejection of claims 22-24, 27-36, 39-41 and 44-58 under 35 U.S.C. § 112, second paragraph, be withdrawn.

IV. CLAIM REJECTION UNDER 35 U.S.C. § 103(a)

Claims 22-24, 27-36, 41, 44-53 and 54-58 stand rejected under 35 U.S.C. § 103(a) as being obvious over Huynh *et al.* (1991) *Experimental Cell Research* 197:191-199, U.S. Patent No. 5,227,301, Fahnestock *et al.* (1997) *Appl. Microbiol. Biotechnol.* 47:23-32, and Ebert *et al.* (1994) *Bio/Technology* 12:699-702. Applicants respectfully request that the rejection be withdrawn in view that claims 22-24, 27-36, 41, 44-53 and 54-58 have been canceled.

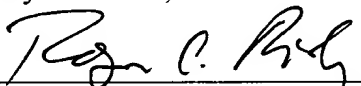
CONCLUSION

In light of the above amendments and remarks, Applicants respectfully request that the Patent Office reconsider this application with a view towards allowance.

No fees, other than those for the 1-month Extension of Time and the Notice of Appeal, are believed to be due with this paper. However, the Commissioner is hereby authorized to charge any required fee to Jones Day Deposit Account No. 50-3013 (referencing no. 602922-999008).

Respectfully submitted,

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